An Investigation of

THE RECOVERY OF GOLD

from an Oldham tailing sample

submitted by

SEABRIGHT RESOURCES LTD.

Progress Report No. 2

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NOTE:

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LAKEFIELD RESEARCH
A Division of Falconbridge Limited
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EXECUTIVE SUMMARY

The Oldham tailing sample as received assayed 3.52 ± 0.68 g/t Au with a fineness of 46.2 % minus 200 mesh. About 42 % of the gold was distributed in the minus 400 mesh fraction.

The gold recovery by gravity concentration (Wilfley and Mozley tables) was about 25 % ± 5 %. The Mozley concentrate representing 0.10 % of the sample weight assayed 950 to 1000 g/t Au.

The organic and the slime contained in the sample effects the requirements for flotation reagent for gold recovery. Accordingly, after removing the slime in a fraction of 8 to 10 % of total sample weight, 55.7 % of the gold was recovered from the gravity tailing into a flotation rougher concentrate which assayed 48 g/t Au. This concentrate could then be upgraded to 280 g/t Au at a recovery of 45 %. The total gold recovery from the gravity concentrate, the rougher concentrate and the slime was 90 %. The rougher tailing assayed 0.3 g/t Au.

A similar result was obtained by flotation alone. After removing 23.6 % of the weight of the sample as received into a slime fraction, 65.5 % of the gold was recovered into a rougher concentrate which assayed 71 g/t Au.

The concentrate was then upgraded to 364 g/t Au with recovery of 60.1 %. The total gold recovery from the rougher concentrate and the slime was therefore 89 %. With regrinding to 70 % minus 200 mesh or finer, the total gold recovery was improved to 92 %.

Gold extraction by cyanidation produced the most satisfactory results. With the grind of 60 % minus 200 mesh or finer, 95 % to 98 % of the gold was extracted either from the sample as received or from the flotation product leaving residues assaying 0.06 g/t Au. The reagent requirement was 0.5 kg/t NaCN and 5.5kg/t CaO.

The Bond Work index was 14.08 on the Beaver Dam ore sample and 37.4 on the Oldham tailing sample.

INTRODUCTION

Preliminary testwork on the recovery of gold from a Beaver Dam auriferous sulphide ore had been completed and reported on May 15, 1986.

In a telephone conversation, Mr. D.M. Doyle of CANMET requested us to conduct the same testwork on an Oldham tailing sample under the same contract. On May 27, 1986, Mr. Ed Thornton of Seabright Resources requested a Bond Work Index determination on both Beaver Dam ore and Oldham tailing sample. The testwork has been completed and is presented in this report. On July 8, 1986, Mr. Ed Thornton requested a temporary suspension on the testwork awaiting receipt of a third sample for a systematic investigation.

LAKEFIELD RESEARCH

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TECHNICAL RESULT AND DISCUSSION

1. Head Sample

The Oldham tailing sample was received as a slurry. The solid and water were separated and assayed as below:

	Solid	Water
Gold (Au)	4.16 g/t	-
Silver (Ag)	<2.0 g/t	-
Iron (Fe)	3.24 %	-
Mercury (Hg)	0.0043 %	0.002 mg/L
Arsenic (As)	0.69 %	2.85 mg/L
Sulphur (S)	12.9 %	-
Carbon (C)	1.21 %	-

The size distribution and the fraction gold assay is shown in Table 1. The average calculated head assay from the testwork is 3.53 ± 0.68 g/t Au.

TABLE NO. 1 - Size Distribution and Fraction Gold Assay on the Oldham Tailing Sample

Particle Size	Weight %		Assay	% Au Distribution	
	Individual	Cumulative	Au g/t	Individual	Cumulative
+ 65 mesh	11.15	11.15	9.29	26.5	26.5
-65 + 100 mesh	10.94	22.09	1.03	2.9	29.4
-100 + 150 mesh	15.88	37.97	2.10	8.5	37.9
-150 + 200 mesh	15.76	53.73	1.54	6.2	44.1
-200 + 270 mesh	12.30	66.03	4.60	14.5	58.6
-270 + 400 mesh	9.20	75.23	4.35	10.2	68.8
-400 mesh + 21.7 µm	8.32	83.55	8.63	18.4	87.2
-21.7 µm + 11.5 µm	6.30	89.85	4.04	6.5	93.7
-11.5 µm	10.15	100.00	2.45	6.3	100.0
Head (Calc.)	100.00	-	3.91	100.0	-

Technical Result and Discussion - Continued

2. Bond Work Index Determination

The minus 10 mesh Beaver Dam ore sample and the minus 65 mesh Oldham tailing sample were used for work index determination. The Bond Work Index was determined by a standard ball mill closed circuit grindability test. The fineness of classification was 150 mesh. The results are summarized below.

	Beaver Dam Ore	Oldham Tailing
Work Index	14.08	37.4
Screen Size Test in microns	104	104
Net grams of undersize produced per revolution of test mill	1.32	1.30
Size in microns which 80 % of test product passes	74.0	4.8
Size in microns which 80 % of test feed passes	1128	

3. Gravity-Flotation Tests

The slurry as received was passed over a laboratory Wilfley table. The Wilfley table concentrate was further upgraded on a Mozley table. The tailing and the middling of the tables were combined for flotation. The variables in the flotation were the reagent, de-sliming and the regrind. The results are described in the following sections.

3.1. Effect of Flotation Reagent

The collectors, Aero xanthate 350, Aerofloat 208, Aerofloat 242, AeroPromoter 404 and the frother MIBC, Aerofroth 25 were tested in this investigation. The results are summarized in Table 2.

Technical Result and Discussion - Continued

3.1. Effect of Flotation Reagent - Cont'd

Gold recovery into the Mozley concentrate ranged from 14.6 % to 26.5 %. The grade ranged from 248 g/t Au to 1104 g/t Au, dependent upon the weight percent. The effects of flotation reagent and the de-sliming on the gold recovery from the gravity tailing are shown in Tests 11 to 14.

In Test 11, AX350, AF208, MIBC and DF250 were used in the flotation. 44.5 % of the gold was recovered in the rougher concentrate leaving a rougher tailing assaying 1.07 g/t Au. The total gold recovery from both Mozley concentrate and the rougher concentrate was 68 %. The rougher concentrate which assayed 67.6 g/t Au, could be upgraded by four cleaning stages to a concentrate assaying 471 g/t Au for 31.7 % recovery. The poor gold recovery with these conditions was due to the slime and organic substances in the sample, which resulted in high reagent consumption and unstable froth.

In Test 12, some of the slime was removed and AX350, AF208, AF25 and DF250 were used in the flotation. 55.7 % of the gold was recovered in the rougher concentrate leaving a rougher tailing assaying 0.38 g/t Au. The total gold recovery from slime, Mozley concentrate and tne rougher concentrate was 90 %. The grade of the slime was 3.33 g/t Au, which was equivalent to the head assay. The gold recovery excluding the slime would be 82.2 %. The rougher concentrate which assayed 47.9 g/t Au was upgraded to 279 g/t Au for a recovery of 45.2 %.

In Tests 13 and 14, collectors AX350, AF242 and AP404 were used. 29.8 % of the gold and 50.7 % of the gold were respectively recovered in the rougher concentrate leaving a rougher tailing which assayed 1.81 g/t Au and 0.58 g/t Au respectively. The total gold recovery from the slime, Mozley concentrate and the rougher concentrate was 63.9 % and 84.9 % respectively.

The results indicate that the flotation conditions in Test 12 produced the best gold recovery from the sample received.

Technical Result and Discussion - Continued

3.1. Effect of Flotation Reagent - Cont'd

TABLE NO. 2 - Gravity-Flotation Results - Effect of Flotation Reagents

Test No.	Flotation Reagents	Product	Weight %	Assay Au g/t	% Distribution Au
11	AX350, AF208 MIBC, DF250	Mozley Conc.	0.31	248	23.5
		4th Cleaner Conc.	0.22	471	31.7
		1st Cleaner Conc.	0.47	253	36.4
		Rougher Conc.	2.15	67.6	44.5
		Rougher Tail.	97.54	1.07	32.0
12	AX350, AF208 AF25, DF250	Mozley Conc.	0.08	1104	26.5
		Slime	7.86	3.33	7.8
		4th Cleaner Conc.	0.54	279	45.2
		1st Cleaner Conc.	1.68	103.6	52.2
		Rougher Conc.	3.87	47.9	55.7
		Rougher Tail.	88.19	0.38	10.0
13	AF242, AP404 DF250	Mozley Conc.	0.11	962	24.5
		Slime	10.57	3.92	9.6
		4th Cleaner Conc.	0.10	975	22.5
		1st Cleaner Conc.	1.19	102.5	28.2
		Rougher Conc.	3.06	42.2	29.8
		Rougher Tail.	86.26	1.81	36.1
14	AX350, AP404 DF250	Mozley Conc.	0.13	361	14.6
		Slime	12.65	4.98	19.6
		4th Cleaner Conc.	0.36	373	41.7
		1st Cleaner Conc.	1.05	148.5	48.5
		Rougher Conc.	2.55	63.9	50.7
		Rougher Tail.	84.67	0.58	15.1

3.2. Effect of Regrind

The sand fraction of the gravity concentration tailing was reground to 80.5 % and 89.6 % minus 200 mesh, followed by flotation using AX350, AF208, AF25 and DF250 as in Test 12. The slime was also floated as the sand fraction but without further cleaning. The results are summarized in Table 3.

Technical Result and Discussion - Continued

3.2. Effect of Regrind - Cont'd

In Test 21R, the Mozley concentrate assayed 1099 g/t Au for a recovery of 44.8 % of the gold. The rougher concentrate recovered 43.2 % of the gold from the sand fraction and 5.9 % of the gold from the slime. The combined rougher concentrate represented a recovery of 49.1 % of the gold leaving the combined rougher tailing assaying 0.33 g/t Au. The total gold recovery from the Mozley concentrate and the combined rougher concentrate was 93.9 %.

There was no improvement in Test 22R. The gold recovery was 30.0 % in the Mozley concentrate, 50.5 % in the rougher concentrate of the sand fraction and 10.5 % in the rougher concentrate of the slime, for an overall recovery of 91 %. The combined tailing assayed 0.38 g/t Au.

TABLE NO. 3 - Gravity-Flotation Results - Effect of Regrind

Test No.	Regrind % -200 mesh	Product	Weight %	Assay Au g/t	% Distribution Au
21R	80.5	Mozley Conc.	0.20	1099	44.8
		4th Cleaner Conc.	0.20	850	34.7
		1st Cleaner Conc.	2.20	93	41.8
		Rougher Conc.	6.60	32	43.2
		Slime Ro. Conc.	2.50	11.7	5.9
		Rougher Tail.	83.50	0.25	4.3
		Slime Ro. Tail.	7.20	1.23	1.8
		Total Ro. Conc.	9.10	26.4	49.1
		Total Ro. Tail.	90.70	0.33	6.1
22R	89.6	Mozley Conc.	0.1	1079	30.0
		4th Cleaner Conc.	0.3	470	39.1
		1st Cleaner Conc.	3.9	43.5	46.9
		Rougher Conc.	11.7	15.6	50.5
		Slime Ro. Conc.	2.9	13.0	10.5
		Rougher Tail.	77.8	0.28	6.0
		Slime Ro. Tail.	7.5	1.40	3.0
		Total Ro. Conc.	14.6	15.1	61.0
		Total Ro. Tail.	85.3	0.38	9.0

Technical Result and Discussion - Continued

4. Cyanidation Tests

The sample was pulped tc 33 % solids in a two liter bottle and the cyanidation was carried out on rolls at pH 11 for two 24 hour periods. The cyanide strength was 0.5 g/L NaCN or 1.0 g/L NaCN. The results are summarized in Table 4.

In Tests 15 and 16, the sample as received was 46.27 % minus 200 mesh. The gold recoveries obtained from 0.5 g/L NaCN and 1.0 g/L NaCN were the same. At 24 hours leach time, 91 % of the gold was extracted leaving a residue which assayed 0.3 g/t Au. 95 % of the gold was extracted after 48 hours leach and the residue assayed 0.16 g/t Au.

In Test 17, the sample was reground to 84.6 % minus 200 mesh and cyanided with 0.5 g/L NaCN. 97 % of the gold was extracted after 24 hours leach and the residue assayed 0.12 g/t Au. 98.5 % of the gold was extracted after 48 hours leach and the residue assayed 0.06 g/t Au. The minimum reagent required was 0.6 kg/t NaCN and 5.7 kg/t CaO.

TABLE NO. 4 - Cyanidation Results

Test No.	Grind % -200 mesh	NaCN g/L	Time h	NaCN, kg/t Added	NaCN, kg/t Cons.	CaO, kg/t Added	CaO, kg/t Cons.	Residue Au g/t	% Au Extraction	Calc. Head Au g/t
15	46.27	0.5	24	1.46	0.66	5.53	5.37	0.29	91.5	-
			48	2.43	0.72	7.00	6.64	0.17	94.5	3.43
16	46.27	1.0	24	2.62	1.09	5.40	5.19	0.31	91.0	-
			48	4.57	1.20	6.88	6.41	0.16	95.5	3.44
17	84.6	0.5	24	1.57	0.59	5.87	5.64	0.12	97.0	-
			48	2.55	0.65	7.36	7.03	0.06	98.5	4.01

Common cyanidation conditions: pulp density : 33 % solids
pH 11 with $Ca(OH)_2$

Technical Result and Discussion - Continued

5. Flotation Tests

The sample was de-slimed. The sand fraction was reground to 55.1 %, 72.3 % and 83.3 % minus 200 mesh and floated with reagent AX350, AF208, AF25, DF250 as in Test 12. The results are summarized in Table 5.

The slime, weighed 10.81 % to 12.78 %, contained 23.6 % to 34.3 % of the gold and assayed 5.69 g/t Au to 8.10 g/t Au.

In Test 18, the rougher concentrate assayed 70.7 g/t Au for a recovery of 65.5 % of the gold leaving a rougher tailing assaying 0.33 g/t Au. The rougher concentrate was upgraded to 364 g/t Au with recovery of 60.1 %. The total gold recovery from the slime and the rougher concentrate was 89.1 %.

With a finer regrind, the total gold recovery improved slightly. In Test 19, 92 % of the gold was recovered and the rougher tailing assayed 0.27 g/t Au. In Test 20, 91.7 % of the gold was recovered and the rougher tailing assayed 0.30 g/t Au.

TABLE NO. 5 - Flotation Results

Test No.	Grind % -200 mesh	Product	Weight %	Assays Au g/t	% Distribution Au
18	55.1	Slime	10.81	5.69	23.6
		4th Cl. Conc.	0.43	364.	60.1
		1st Cl. Conc.	0.96	171	63.1
		Rougher Conc.	2.41	70.7	65.5
		Rougher Tail.	86.78	0.33	10.9
19	72.3	Slime	12.78	6.51	29.3
		4th Cl. Conc.	0.67	226	53.3
		1st Cl. Conc.	2.90	56.8	58.0
		Rougher Conc.	7.90	22.7	63.2
		Rougher Tail.	79.32	0.27	7.5
20	83.3	Slime	12.58	8.10	34.3
		4th Cl. Conc.	0.41	372	51.3
		1st Cl. Conc.	1.89	87.4	55.6
		Rougher Conc.	5.61	30.4	57.4
		Rougher Tail.	81.81	0.30	8.3

Common flotation reagent: AX350, AF208, AF25, DF250

Technical Result and Discussion - Continued

6. Flotation-Cyanidation Tests

The flotation was conducted as in the previous section (5). The rougher concentrate was cleaned twice. All products were cyanided at 33 % solids, pH 11, and 1.0 g/L NaCN for 48 hours. The results are summarized in Table 6.

In Test 23, 58.4 % of the sample passed 200 mesh. The total gold recovery from the slime and the rougher concentrate was 87.4 %. In Test 24, 84.8 % of the sample passed 200 mesh. The total gold recovery from the slime and the rougher concentrate was 90.4 %.

The gold extraction from each product was more than 94.4 % by cyanidation. In Test 23, 98.3 % of the gold was extracted and the residue assayed 0.05 g/t Au. In Test 24, 97.4 % of the gold was extracted and the residue assayed 0.08 g/t Au. The overall gold extraction is confirmed by the straight cyanidation result as in Test 17 (Table 4).

TABLE NO. 6 - Flotation-Cyanidation Results

Test No.	Grind % -200 mesh	Product	Weight %	Flotation		Cyanidation		Overall % Au Recovery*
				Assay Au g/t	% Dist. Au	Residue Au, g/t	% Au Extraction	
23	58.4	2nd Cl. Conc.	0.6	321.5	63.3	4.59	98.5	62.3
		2nd Cl. Tail.	0.6	21.2	4.2	0.16	99.2	4.2
		1st Cl. Tail.	2.4	5.75	4.5	0.04	99.2	4.5
		Rougher Tail.	83.3	0.46	12.6	0.02	96.0	12.1
		Slime	13.1	3.57	15.4	0.04	98.9	15.2
		Total	100.0	3.04	100.0	0.05	-	98.3
24	84.8	2nd Cl. Conc.	1.1	194.1	67.3	3.79	98.1	66.0
		2nd Cl. Tail.	1.6	3.89	2.0	0.11	96.8	1.9
		1st Cl. Tail.	5.1	5.27	8.5	0.30	94.4	8.0
		Rougher Tail.	80.5	0.38	9.6	0.02	95.1	9.1
		Slime	11.7	3.41	12.6	0.06	98.3	12.4
		Total	100.0	3.17	100.0	0.08	-	97.4

Techrical Result and Discussion - Continued

7. Gravity-Flotation-Cyanidation Tests

In Test 25, gravity concentration (Wilfley table and Mozley table) was conducted on the sample followed by de-sliming, regrinding the sand fraction and flotation. One cleaning stage was performed. The standard cyanidation was conducted on the 1st cleaner concentrate, the 1st cleaner tailing and the slime.

The results in Table 7 show that 26.6 % of the gold was recovered in the Mozley concentrate. 66.6 % of the gold was recovered in the rougher concentrate and the slime. The gold extraction by the cyanidation was 62.3 %. Thus, the total gold recovery was 88.9 %.

The rougher tailing contained 6.8 % of the gold, which is extractable by the cyanidation. If the rougher tailing is also reported to the cyanidation, the total gold recovery would be 95 % or more.

TABLE NO. 7 - Results of Gravity-Flotation-Cyanidation Test (Test 25)

Product	Weight %	Gravity Conc.		Flotation		Cyanidation		Overall % Au Recovery*
		Au g/t	% Rec.	Au g/t	% Rec.	Residue Au g/t	% Au Extraction	
Mozley Conc.	0.15	845	26.6	-	-	-	-	26.6
1st Cl. Conc.	2.57	-	-	108	58.3	7.39	93.1	54.3
1st Cl. Tail.	5.06	-	-	4.78	5.1	0.24	95.8	4.9
Rougher Tail.	85.67	-	-	0.38	6.8	-	-	-
Slime	6.55	-	-	2.33	3.2	0.05	97.7	3.1
Total	100.00	-	26.6	-	73.4	1.45	-	88.9

*gravity+flotation+cyanidation

Technical Result and Discussion - Continued

8. Chemical Analysis and Mineralogical Examination of a Flotation Concentrate

The flotation third cleaner concentrate obtained from Test 10 was chemically assayed and examined mineralogically for impurities. The chemical analysis of the concentrate sample is shown in Table 8.

The concentrate was also examined by reflective light microscopy for identification of gold, graphite, fluorine, arsenic and other sulphides.

An occurrence of gold was identified. A number of flakes of gold were observed in a single grain of silicate mineral. Graphite was present as inclusions of very fine-grained flakes and aggregates of flakes in silicate grains. Fluorite was not identified but fluorite may have been present as fine grained fluorite or, in a silicate or substituting for hydroxyl in a silicate. Arsenic was present as arsenopyrite. Other sulphides present were pyrite, marcasite and chalcopyrite.

TABLE NO. 8 - Chemical Analysis of the Third Cleaner Conc. (obtained from Test 10)

Au (g/t)	31.1
Ag (g/t)	16.3
Cu (%)	0.17
Fe (%)	15.8
Zn (%)	0.069
Bi (%)	0.006
Sb (%)	0.005
Hg (%)	<0.0001
As (%)	4.96
S (%)	0.18
F (%)	0.08
Insol (%)	54.3

CONCLUSIONS

The fineness of the Oldham tailing sample as received was 46.2 % minus 200 mesh. The gold recovery by gravity concentration (Wilfley and Mozley tables) was about 25 %. The Mozley concentrate weighed 0.10 % of the head and assayed 950 to 1000 g/t Au.

Due to organic substances and slimes contained in the sample, large quantities of flotation reagents were required. After de-sliming, 55.7 % of the gold could be recovered from the gravity tailing into a concentrate which assayed 48 g/t Au. Cleaning in four stages, the concentrate could be upgraded to 280 g/t Au at a recovery of 45 %. The total gold recovery from the gravity concentrate, the rougher concentrate and the slime was 90 % with a rougher tailing assaying 0.3 g/t Au. A similar result was also obtained by flotation alone.

The gold extraction by cyanidation produced the most satisfactory results. With the grind of 60 % minus 200 mesh or finer, 95 to 98 % of the gold was extracted leaving the residue assaying 0.06 g/t Au.

DETAILS OF TESTS

BOND WORK MILL CLOSED CIRCUIT GRINDABILITY TEST

Sample: Minus 10 mesh (Beaver Dam)

Mesh of Grind: 150 mesh

Feed: 23.2 % passing 150 mesh

Cycle	New Feed g	Number of Revolutions	grams of minus 150 mesh			
			In Mill Product	In Mill Feed	Net Product	Net Per Revolution
A	1272.4	100	373.5	295.2	78.3	0.78
B	373.5	355	497.8	86.7	411.1	1.16
C	497.8	214	386.9	115.5	271.4	1.27
D	386.9	216	371.6	89.8	281.8	1.30
E	371.6	214	372.3	86.2	286.1	1.34
F	372.3	207	355.8	86.4	269.4	1.30

Unit Volume (700 mL) = 1272.4 g in mill : Equivalent to 1817.7 kg/m^3 at minus 150 mesh

Ideal potential product = 363.9 g

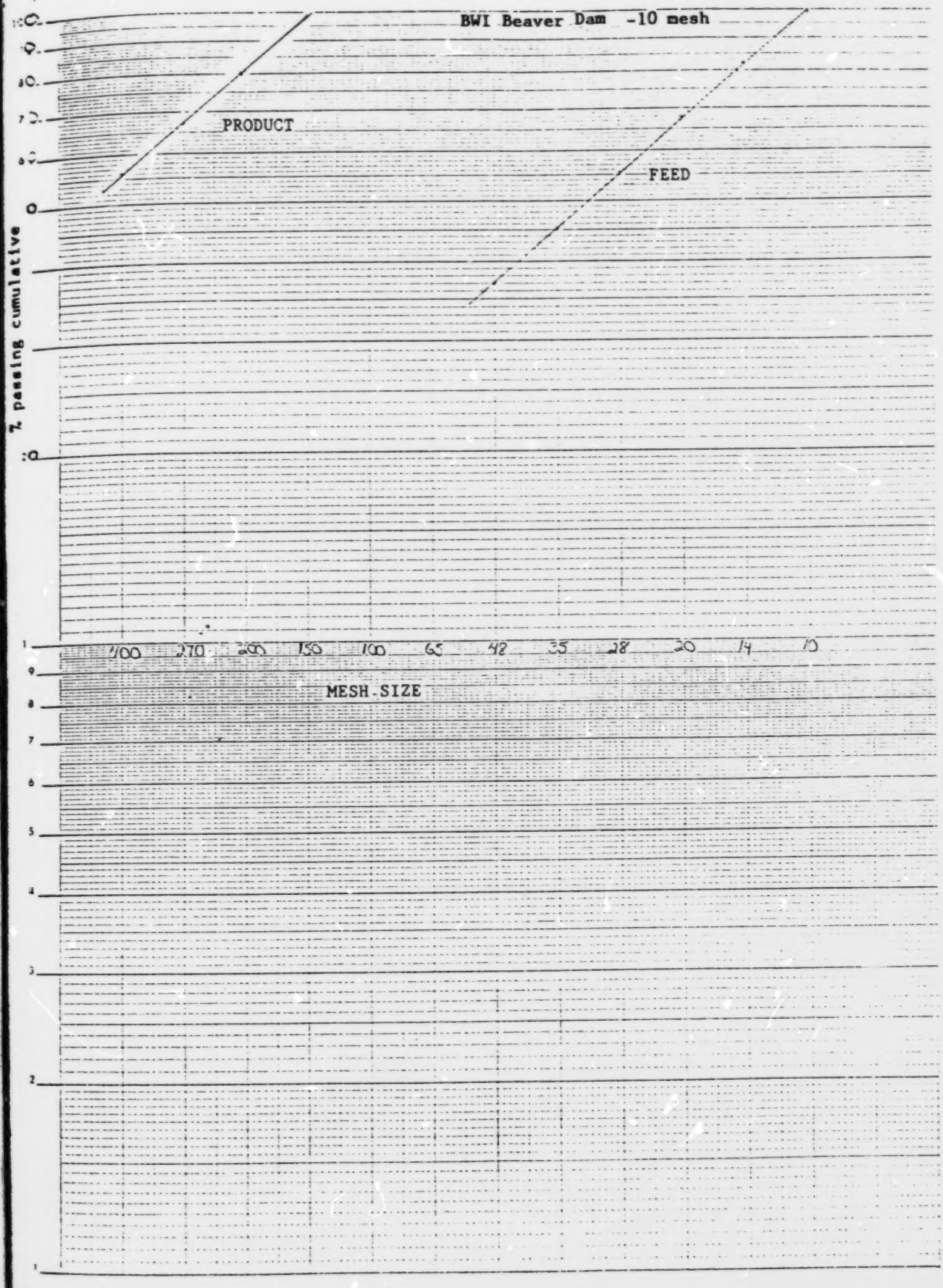
Average of last 2 periods : 364.1 g : 250 % circulating load
: 1.32 Net g minus 150 mesh per revolution

BONDS FORMULA

$$Wi = 44.5 \Big/ \left[(P_1)^{0.23} \times (Gbp)^{0.82} \left(\frac{10}{\sqrt{P}} - \frac{10}{\sqrt{F}} \right) \right]$$

Where:

Wi = Work Index	=	14.08
P_1 = Screen size test in microns	=	104
Gbp = Net grams of undersize produced per revolution of test mill	=	1.32
P = Size in microns which 80 percent of test product passes	=	74.0
F = Size in microns which 80 percent of test feed passes	=	1128


BWI Beaver Dam -10 mesh
PRODUCT
FEED
% passing cumulative
100
270
200
150
100
65
48
35
28
20
14
10
MESH SIZE

SCREEN ANALYSES (Beaver Dam)

Oversize (BWI)

Mesh Size (Tyler)	% Retained Individual	% Retained Cumulative	% Passing Cumulative
+ 10	0.1	0.1	99.9
14	3.1	3.2	96.8
20	3.7	6.9	93.1
28	4.4	11.3	88.7
35	6.5	17.8	82.2
48	11.9	29.7	70.3
65	17.6	47.3	52.7
100	23.2	70.5	29.5
150	27.0	97.5	2.5
- 150	2.5	100.0	-
Total	100.0	-	-

Beaver Dame Head Sample

+ 10	1.0	1.0	99.0
14	17.0	18.0	82.0
20	14.3	32.3	67.7
28	12.4	44.7	55.3
35	10.2	54.9	45.1
48	8.1	63.0	37.0
65	5.6	68.6	31.4
100	4.4	73.0	27.0
150	3.8	76.8	23.2
200	3.1	79.9	20.1
270	2.5	82.4	17.6
400	2.2	84.6	15.4
- 400	15.4	100.0	-
Total	100.0	-	-

BWI Product

+ 150	1.6	1.6	98.4
200	17.7	19.3	80.7
270	13.4	32.7	67.3
400	11.3	44.0	56.0
- 400	56.0	100.0	-
Total	100.0	-	-

BOND WORK MILL CLOSED CIRCUIT GRINDABILITY TEST

Sample: 65 mesh (Oldham Tailing)

Mesh of Grind: 150 mesh

Feed: 62.0 % passing 150 mesh

Cycle	New Feed g	Number of Revolutions	grams of minus 150 mesh			
			In Mill Product	In Mill Feed	Net Product	Net Per Revolution
A	1025.1	100	703.2	635.6	67.6	0.68
B	703.2	210	593.7	436	157.7	0.75
C	593.7	100	457.2	368.1	89.1	0.89
D	457.2	11	290.4	283.5	6.9	0.63
E	290.4	180	410.1	180.1	230	1.28
F	410.1	30	297.4	254.3	43.1	1.44
G	297.4	76	280.2	184.4	95.8	1.26
H	280.2	95	287.4	173.7	113.7	1.20

Unit Volume (700 mL) = 1025.1 g in mill : Equivalent to 1464.4 kg/m^3 at minus 150 mesh

Ideal potential product = 293.2 g

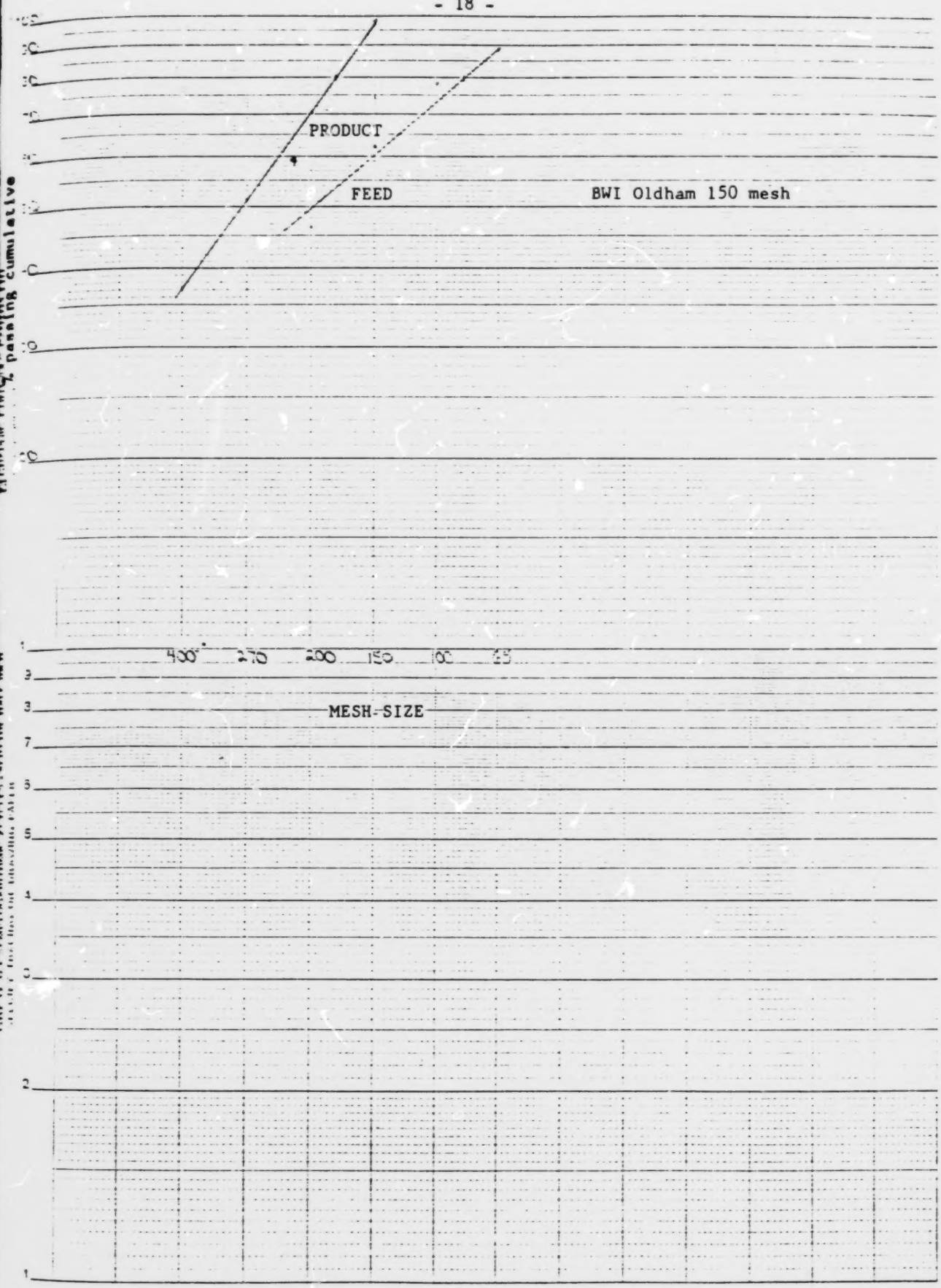
Average of last 3 periods : 288.3 g : 254.2 % circulating load
: 1.30 Net g minus 150 mesh per revolution

BONDS FORMULA

$$Wi = 44.5 \Big/ \left[(P_1)^{0.23} \times (Gbp)^{0.82} \left(\frac{10}{\sqrt{P}} - \frac{10}{\sqrt{F}} \right) \right]$$

Where:

Wi	= Work Index	= 37.4
P_1	= Screen size test in microns	= 104
Gbp	= Net grams of undersize produced per revolution of test mill	= 1.30
P	= Size in microns which 80 percent of test product passes	= 84.8
F	= Size in microns which 80 percent of test feed passes	= 175


PRODUCT
FEED
BWI Oldham 150 mesh
% passing cumulative
400
270
200
150
100
65
MESH-SIZE

SCREEN ANALYSES (Oldham Tailing)

Oldham Tailing

Particle Size	% Retained Individual	% Retained Cumulative	% Passing Cumulative
+ 65 mesh	11.2	11.2	88.8
100	10.9	22.1	77.9
150	15.9	38.0	62.0
200	15.8	53.8	46.2
270	12.3	66.1	33.9
400	9.2	75.3	24.7
31.0 µm	2.9	78.2	21.8
21.7	5.5	83.7	16.3
14.9	4.3	88.0	12.0
11.5	2.0	90.0	10.0
- 11.5	10.0	100.0	-
Total	100.0	-	-

Specific Gravity 2.69

Oversize

Mesh Size (Tyler)	% Retained Individual	% Retained Cumulative	% Passing Cumulative
+ 65	8.2	8.2	91.8
100	25.8	34.0	66.0
150	58.3	92.3	7.7
- 150	7.7	100.0	-
Total	100.0	-	-

Undersize

+ 150	2.3	2.3	97.7
200	27.2	29.5	70.5
270	19.3	48.8	51.2
400	14.1	62.9	37.1
- 400	37.1	100.0	-
Total	100.0	-	-

Test No. 11

Purpose: To produce a gravity concentrate and a flotation concentrate from the Oldham tailing.

Procedure: Pass 10 kg of tailing over the Wilfley table and clean the table concentrate on the Mozely. Combine table and Mozely tailings, dewater and float a rougher concentrate. Clean the concentrate four times.

Feed: 10,000 grams Oldham tailing (as received)

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	A350	R208	MIBC	DF250	Cond.	Froth	
Rougher Flot.	10	10	10	2	1	2	7.6
	5	5	2	1	1	2	-
	5	5	2	1	1	2	-
	5	5	2	1	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	3	5	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	7.4
	2	2	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	1	1	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-

Stage	Rougher	1st Cleaner	2nd + 3rd Cleaners	4th Cleaner
Flotation Cell	Agitair LA-15	2000 g D-2	1000 g D-1	500 g D-1
Speed rpm	700	1200	1500	1200

Test No. 11 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozely Conc.	0.31	248	23.1	23.5	19.1
2. Flotation Cl. Conc.	0.22	471	67.9	31.7	39.8
3. 4th Cl. Tail.	0.02	112	34.5	0.7	1.8
4. 3rd Cl. Tail.	0.09	83.5	21.5	2.3	5.2
5. 2nd Cl. Tail.	0.14	39.6	9.7	1.7	3.6
6. 1st Cl. Tail.	1.68	15.7	6.8	8.1	30.5
7. Rougher Tail.	97.54	1.07	<2.0	32.0	0.0
Head (Calc.)	100.00	3.27	0.38	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.53	340.5	41.70	55.2	58.9
Products 1 to 3	0.55	332.3	41.4[illegible]	55.9	60.7
Products 1 to 4	0.64	297.3	38.64	58.2	65.9
Products 1 to 5	0.78	251.0	33.45	59.9	69.5
Products 1 to 6	2.46	90.3	15.25	68.0	100.0

Test No. 12

Purpose:	To produce a gravity concentrate from the Oldham tailing.
Procedure:	The sample was passed over a Wilfley table. The concentrate and tailings were collected. The concentrate was cleaned on a Mozley table. The table tail and Mozley tail were combined and reserved for flotation. The Mozley concentrate was assayed for Au.
Feed:	2000 grams Oldham tailing.

Test No. 12 - Flotation

Purpose: To float a sulphide concentrate.

Procedure: The sample was deslimed. The slimes were assayed for gold and the sands were ground for flotation.

Feed: 2000 grams combined table tail and Mozley tail.

Grind: 10 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.2
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1500	1200

Test No. 12 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.08	1104	116	26.5	15.7
2. Flot. Cl. Conc.	0.54	279	43.1	45.2	39.4
3. 4th Cl. Tail.	0.22	50.1	14.2	3.3	5.3
4. 3rd Cl. Tail.	0.31	16.6	11.4	1.5	6.0
5. 2nd Cl. Tail.	0.61	11.8	8.9	2.2	9.2
6. 1st Cl. Tail.	2.19	5.26	6.6	3.5	24.4
7. Slimes	7.86	3.33	<2.0	7.8	0.0
8. Rougher Tail.	88.19	0.38	<2.0	10.0	0.0
Head (Calc.)	100.00	3.34	0.59	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.62	385.5	52.5	71.7	55.1
Products 1 to 3	0.84	297.6	42.5	75.0	60.4
Products 1 to 4	1.15	221.9	34.1	76.5	66.4
Products 1 to 5	1.76	149.1	25.4	78.7	75.6
Products 1 to 6	3.95	69.3	-	82.2	-
Products 1 to 7	11.81	25.4	-	90.0	-
Products 2+3+4+5	1.68	103.6	-	52.2	-
Products 2+3+4+5+6	3.87	47.9	-	55.7	-

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	1.7	1.7	98.3
100	5.2	6.9	93.1
150	13.8	20.7	79.3
200	19.5	40.2	59.8
270	18.5	58.7	41.3
400	15.4	74.1	25.9
- 400	25.9	100.0	-
Total	100.0	-	-

Test No. 13

Purpose:	To produce a gravity concentrate from the Oldham tailing.
Procedure:	As for Test 12.
Feed:	2000 grams Oldham tailing

Test No. 13 - Flotation

Purpose: To float a sulphide concentrate.

Procedure: The sample was deslimed. The slimes assayed for gold and the sands were ground for flotation.

Feed: 2000 grams combined table tail and Mozley tail.

Grind: 10 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t			Time, minutes		pH
	AF242	AP404	DF250	Cond.	Froth	
Rougher	20	20	9	1	2	7.3
	10	10	-	1	2	-
	10	10	6	1	2	-
	10	10	-	1	3	-
1st Cleaner	-	-	-	1	3	-
	6	10	-	1	3	-
2nd Cleaner	-	-	-	1	2	-
	4	4	-	1	2	-
3rd Cleaner	-	-	-	1	2	-
	2	2	-	1	2	-
4th Cleaner	-	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1500	1200

Test No. 13 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.11	962	196	24.5	30.3
2. Flot. Cl. Conc.	0.10	975	93.3	22.5	13.1
3. 4th Cleaner Conc.	0.05	2.91	13.3	0.1	9.4
4. 3rd Cleaner Tail.	0.23	56.5	14.5	3.0	4.7
5. 2nd Cleaner Tail.	0.81	14.0	5.9	2.6	6.7
6. 1st Cleaner Tail.	1.87	3.80	2.3	1.6	6.0
7. Slimes	10.57	3.95	2.0	9.6	29.8
8. Rougher	86.26	1.81	<2.0	36.1	0.0
Head (Calc.)	100.00	4.33	0.71	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.21	968.2	147.1	47.0	43.4
Products 1 to 3	0.26	782.6	144.4	47.1	52.8
Products 1 to 4	0.49	441.8	83.4	50.1	57.5
Products 1 to 5	1.30	175.2	35.1	52.7	64.2
Products 1 to 6	3.17	74.1	15.8	54.3	70.2
Products 1 to 7	13.74	20.1	-	63.9	-
Products 2+3+4+5	1.19	102.5	-	28.2	-
Products 2+3+4+5+6	3.06	42.2	-	29.8	-

Test No. 14

Purpose:	To produce a gravity concentrate from the Oldham tailing.
Procedure:	As for Test 12.
Feed:	2000 grams Oldham tailing.

Test No. 14 - Flotation

Purpose: To float a sulphide concentrate.

Procedure: The sample was deslimed. The slimes were assayed for gold and the sands were ground for flotation.

Feed: 2000 grams combined table tail and Mozley tail.

Grind: 10 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t			Time, minutes		pH
	AP404	AX350	DF250	Cond.	Froth	
Rougher	20	20	12	1	2	7.1
	10	10	-	1	2	-
	10	10	9	1	2	-
	10	10	3	1	3	-
1st Cleaner	-	-	-	1	3	-
	6	10	-	1	3	-
2nd Cleaner	-	-	-	1	2	-
	4	4	-	1	2	-
3rd Cleaner	-	-	-	1	2	-
	2	2	-	1	2	-
4th Cleaner	-	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1500	1200

Test No. 14 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.13	361	55.8	14.6	10.3
2. Flot. Cl. Conc.	0.36	373	77.6	41.7	39.6
3. 4th Cleaner Tail.	0.05	102	24.2	1.6	1.7
4. 3rd Cleaner Tail.	0.10	59.8	12.2	1.9	1.7
5. 2nd Cleaner Tail.	0.54	19.5	7.1	3.3	5.4
6. 1st Cleaner Tail.	1.50	4.67	2.6	2.2	5.5
7. Slimes	12.65	4.98	2.0	19.6	35.8
8. Rougher	84.67	0.58	<2.0	15.1	-
Head (Calc.)	100.00	3.22	0.71	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.49	369.8	71.82	56.3	49.9
Products 1 to 3	0.54	345.0	67.41	57.9	51.6
Products 1 to 4	0.64	300.5	58.78	59.8	53.3
Products 1 to 5	1.18	171.9	35.13	63.1	58.7
Products 1 to 6	2.68	78.3	16.92	65.3	64.2
Products 1 to 7	15.33	17.8	-	84.9	-
Products 2+3+4+5	1.05	148.5	-	48.5	-
Products 2+3+4+5+6	2.55	63.9	-	50.7	-

Test No. 15

Purpose: To investigate the recovery of gold and silver from a tailing sample at 0.5 g/L NaCN strength.

Procedure: The sample was pulped with water in a 2 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages. The pulp was filtered and the residue washed three times with water.

Feed: 500 g tailing sample

Solution Volume: 1000 mL Pulp Density 33 % solids

Solution Composition: 0.5 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-2	0.53	2.0	0.50	1.52	0.25	0	0.25	1.52	11.2- 9.8
2-4	0.26	1.0	0.25	0.76	0.50	0.05	0	0.71	11.4-10.6
4-20	0	0.25	0	0.19	0.50	-	0	-	11.2-10.2
20-24	0	0.50	0	0.38	0.41	0.08	0.09	0.54	11.4-10.8
Stage 2:									
0-4	0.53	1.0	0.50	0.76	0.50	0.13	0	0.63	11.4-11.2
4-20	0	0	0	0	0.50	0.11	0	0.02	11.2-11.0
20-24	0	0	0	0	0.47	0.11	0.03	0	11.0-10.8
Total	1.32	4.75	1.25	3.61	0.88	0.19	0.37	3.42	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 0.72
CaO : 6.64

Test No. 15 - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash Sol'n	1880 mL	0.86	0.15	91.5	20.4
2. 48 h Preg + Wash Sol'n	1970 mL	0.028	0.03	3.4	4.4
3. 48 h Cyanide Residue	515.4 g	0.17	<2.0	5.1	75.2
Head (Calc.)	515.4 g	3.43	2.66	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	3850 mL	0.44	0.09	94.9	24.8

Test No. 16

Purpose: To investigate the recovery of gold and silver from a tailing sample with 1.0 g/L NaCN strength.

Procedure: The sample was pulped with water in a 2 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages. The pulp was filtered and the residue washed three times with water.

Feed: 500 g tailing sample

Solution Volume: 1000 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-2	1.05	2.0	1.0	1.52	0.65	0	0.35	1.52	11.2- 9.9
2-4	0.37	1.0	0.35	0.76	1.0	0.05	0	0.71	11.4-10.8
4-20	0	0.16	0	0.12	-	-	-	-	11.0-10.2
20-24	0	0.50	0	0.38	0.79	0.11	0.21	0.44	11.4-11.0
Stage 2:									
0-4	1.05	1.0	1.0	0.76	1.0	0.13	0	0.63	11.4-11.2
4-20	0	0	0	0	1.0	0.13	0	0.0	11.2-11.0
20-24	0	0	0	0	0.94	0.13	0.06	0.0	11.0-10.8
Total	2.47	4.66	2.35	3.54	1.73	0.24	0.62	3.30	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 1.20
CaO : 6.41

Test No. 16 - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash Sol'n	2200 mL	0.73	0.14	91.0	22.1
2. 48 h Preg + Wash Sol'n	2150 mL	0.035	<0.03	4.5	4.3
3. 48 h Cyanide Residue	514.7 g	0.16	<2.0	4.5	73.6
Head (Calc.)	514.7 g	3.44	2.72	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	4350 mL	0.39	0.09	95.5	26.4

Test No. 17

Purpose: To investigate the effect of a finer grind on the tailing sample leached at 0.5 g/L NaCN strength.

Procedure: The sample was pulped with water in a 2 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages. The pulp was filtered and the residue washed three times with water.

Feed: 500 g tailing sample

Solution Volume: 1000 mL Pulp Density 33 % solids

Solution Composition: 0.5 gpL NaCN

pH: 11 with $Ca(OH)_2$

Grind: 30 minutes in the lab pebble mill at 50 % solids.

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-2	0.53	2.30	0.50	1.75	0.20	0	0.30	1.75	11.0-10.0
2-4	0.32	1.0	0.30	0.76	0.50	0.08	0	0.68	11.4-10.8
4-20	0	0.15	0	0.11	-	-	-	-	11.1-10.2
20-24	0	0.50	0	0.38	0.50	0.12	0	0.45	11.4-11.0
Stage 2:									
0-4	0.53	1.0	0.50	0.76	0.50	0.14	0	0.62	11.4-11.2
4-20	0	0	0	0	0.50	0.10	0	0.04	11.2-11.0
20-24	0	0	0	0	0.47	0.05	0.03	0.05	11.0-11.0
Total	1.38	4.95	1.30	3.76	0.97	0.17	0.33	3.59	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 0.65
CaO : 7.03

Test No. 17 - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash Sol'n	1880 mL	1.06	0.35	97.0	37.5
2. 48 h Preg + Wash Sol'n	1940 mL	0.016	0.04	1.5	4.5
3. 48 h Cyanide Residue	510.8 g	0.06	<2.0	1.5	58.0
Head (Calc.)	510.8 g	4.01	3.45	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	3820 mL	0.53	0.19	98.5	42.0

Screen Analysis - 48 h Cyanide Residue

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	0.2	0.2	99.8
100	0.8	1.0	99.0
150	3.5	4.5	95.5
200	10.9	15.4	84.6
270	18.4	33.8	66.2
400	17.8	51.6	48.4
- 400	48.4	100.0	-
Total	100.0	-	-

Test No. 18

Purpose: To investigate the effect of fineness of grind on the recovery of Au and Ag in the flotation concentrate.

Procedure: The sample was deslimed. The slimes were assayed for gold and the sands were ground for flotation.

Feed: 2000 grams Oldham tailing as received.

Grind: 10 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.3
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1200	900

Test No. 18 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Flot. Cl. Conc.	0.43	364	41.2	60.1	21.9
2. 4th Cleaner Tail.	0.02	37.5	147	0.3	3.6
3. 3rd Cleaner Tail.	0.04	48.5	23.1	0.7	1.1
4. 2nd Cleaner Tail.	0.47	10.9	11.6	2.0	6.7
5. 1st Cleaner Tail.	1.45	4.25	2.8	2.4	5.1
6. Slimes	10.81	5.69	4.6	23.6	61.6
7. Rougher Tail.	86.78	0.33	<2.0	10.9	0.0
Head (Calc.)	100.00	2.61	0.81	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.45	349	45.9	60.4	25.5
Products 1 to 3	0.49	325	44.0	61.1	26.6
Products 1 to 4	0.96	171	11.2	63.1	33.3
Products 1 to 5	2.41	70.7	12.9	65.5	38.4
Products 1 to 6	12.75	18.2	-	89.1	-

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	1.9	1.9	98.1
100	6.5	8.4	91.6
150	15.9	24.3	75.7
200	20.6	44.9	55.1
270	18.3	63.2	36.8
400	13.8	77.0	23.0
- 400	23.0	100.0	-
Total	100.0	-	-

Test No. 19

Purpose: To investigate the effect of fineness of grind on the recovery of Au and Ag in flotation concentrate.

Procedure: The sample was deslimed. The slimes were assayed for gold and the sands were ground for flotation.

Feed: 2000 grams Oldham tailing as received.

Grind: 20 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.2
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1200	900

Test No. 19 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Flot. Cl. Conc.	0.67	226	23.2	53.3	13.2
2. 4th Cleaner Tail.	0.28	18.0	28.8	1.8	6.8
3. 3rd Cleaner Tail.	0.33	6.26	7.2	0.7	2.0
4. 2nd Cleaner Tail.	1.62	3.86	5.3	2.2	7.3
5. 1st Cleaner Tail.	5.00	2.95	8.7	5.2	37.0
6. Slimes	12.78	6.51	3.1	29.3	33.7
7. Rougher Tailing	79.32	0.27	<2.0	7.5	0.0
Head (Calc.)	100.00	2.84	1.17	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.95	165	24.8	55.1	20.0
Products 1 to 3	1.28	124	20.3	55.8	22.0
Products 1 to 4	2.90	56.8	11.9	58.0	29.3
Products 1 to 5	7.90	22.7	9.9	63.2	66.3
Products 1 to 6	20.68	12.7	-	92.5	-

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	0.2	0.2	99.8
100	1.7	1.9	98.1
150	8.4	10.3	89.7
200	17.4	27.7	72.3
270	21.5	49.2	50.8
400	17.3	66.5	33.5
- 400	33.5	100.0	-
Total	100.0	-	-

Test No. 20

Purpose: To investigate the effect of fineness of grind on the recovery of Au and Ag in the flotation concentrate.

Procedure: The sample was deslimed. The slimes were assayed for gold and the sands were ground for flotation.

Feed: 2000 grams Oldham tailing as received.

Grind: 30 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.1
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1200	900

Test No. 20 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Flot. Cl. Conc.	0.41	372	32.3	51.3	5.8
2. 4th Cleaner Tail.	0.06	27.7	21.3	0.6	0.6
3. 3rd Cleaner Tail.	0.21	26.1	6.3	1.8	0.6
4. 2nd Cleaner Tail.	1.21	4.62	2.6	1.9	1.4
5. 1st Cleaner Tail.	3.72	1.46	2.0	1.8	3.3
6. Slimes	12.58	8.10	3.0	34.3	16.5
7. Rougher Tailing	81.81	0.30	<2.0	8.3	71.8
Head (Calc.)	100.00	2.97	2.78	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.47	328.0	30.9	51.9	6.4
Products 1 to 3	0.68	234.8	23.3	53.7	7.0
Products 1 to 4	1.89	87.4	10.0	55.6	8.4
Products 1 to 5	5.61	30.4	4.7	57.4	11.7
Products 1 to 6	18.19	15.0	3.5	91.7	28.2

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	0.2	0.2	99.8
100	0.7	0.9	99.1
150	4.3	5.2	94.8
200	11.5	16.7	83.3
270	18.2	34.9	65.1
400	20.0	54.9	45.1
- 400	45.1	100.0	-
Total	100.0	-	-

Test No. 21

Purpose:	To produce a gravity concentrate from the Oldham tailing.
Procedure:	The sample was passed over a Wilfley table. The concentrate and tailings were collected. The concentrate was cleaned on a Mozley table. The Mozley concentrate was assayed for Au. The table tail and Mozley tail were combined and reserved for flotation.
Feed:	2000 grams Oldham tailing as received.
Comments:	The sample was contaminated during the gravity tabling. Repeat as in Test 21R.

Test No. 21 - Flotation

Purpose: To float a sulphide concentrate.

Procedure: The sample was deslimed. The sands were ground for flotation. A rougher flotation was also conducted on the slimes.

Feed: 2000 grams combined table tail and Mozley tail.

Grind: 20 minutes at 65 % solids in a lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
SANDS:							
Rougher	20	20	12	6	1	2	7.3
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-
SLIMES:							
Rougher	5	5	3	1.5	1	2	-
	2.5	2.5	-	0.75	1	2	-
	2.5	2.5	-	0.75	1	2	-
	2.5	2.5	-	0.75	1	2	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners	Rougher
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1	250 g D-1
Speed rpm	1800	1200	900	900

Test No. 21 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.12	1026	585	74.7	18.7
2. Cleaner Conc.	0.44	676	147	18.0	17.2
3. Slime Ro. Conc.	2.69	23.4	8.0	3.8	5.7
4. 4th Cleaner Tail.	0.13	35.0	11.3	0.3	0.4
5. 3rd Cleaner Tail.	0.27	15.7	3.9	0.3	0.3
6. 2nd Cleaner Tail.	1.05	6.10	2.6	0.4	0.7
7. 1st Cleaner Tail.	4.04	1.60	2.6	0.4	2.8
8. Slime Ro. Tail.	9.68	1.70	4.2	1.0	10.8
9. Rougher Tailing	81.58	0.23	<2.0	1.1	43.4
Head (Calc.)	100.00	16.48	3.76	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.56	2729.71	240.86	92.7	35.9
Products 1 to 3	3.25	489.72	48.12	96.5	41.6
Products 1 to 4	3.38	472.23	46.70	96.8	42.0
Products 1 to 5	3.65	438.46	43.54	97.1	42.3
Products 1 to 6	4.70	341.87	34.39	97.5	43.0
Products 1 to 7	8.74	184.58	19.70	97.9	45.8
Products 1 to 8	18.42	88.48	11.55	98.9	56.6

Test No. 21R

Purpose:	To repeat Test 21.
Procedure:	The sample was passed over a Wilfley table. The concentrate and tailing were collected. The concentrate was then cleaned further on a Mozley separator. The concentrate was assayed for gold. The Mozley tail and Wilfley table tail were combined for flotation.
Sample:	2000 grams of sample as received.

Test No. 21R - Flotation

Purpose: To float the sulphides from the sands and slimes.

Procedure: The sample was deslimed. Sands were reground and the sulphides were floated.

Feed: 2000 grams

Grind: 20 minutes at 65 % solids in the lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
SANDS:							
Rougher	20	20	12	6	1	2	7.3
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-
SLIMES:							
Rougher	5	5	3	1.5	1	2	-
	2.5	2.5	-	0.75	1	2	-
	2.5	2.5	-	0.75	1	2	-
	2.5	2.5	-	0.75	1	2	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners	Rougher
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1	250 g D-1
Speed rpm	1800	1500	900	900

Test No. 21R - Continued

Metallurgical Results

Product	Weight %	Assays g/t			% Distribution		
		Au	Ag	Hg	Au	Ag	Hg
1. Mozley Conc.	0.2	1099	154	-	44.8	10.0	-
2. 4th Cl. Conc.	0.2	850	147	0.023	34.7	9.5	1.6
3. Slime Ro. Conc.	2.5	11.7	4.4	0.015	5.9	3.5	13.0
4. 4th Cl. Tail.	0.1	151	123	0.019	3.1	4.0	0.7
5. 3rd Cl. Tail.	0.4	14.7	12.4	0.013	1.2	1.6	1.8
6. 2nd Cl. Tail.	1.5	9.10	9.4	0.0098	2.8	4.5	5.1
7. 1st Cl. Tail.	4.4	1.52	6.1	0.0060	1.4	8.6	9.1
8. Slimes Ro. Tail.	7.2	1.23	<2.0	0.0090	1.8	4.6	22.5
9. Rougher Tail.	83.5	0.25	<2.0	0.0016	4.3	53.7	46.2
Head (Calc.)	100.0	4.90	3.11	0.003	100.0	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.4	974.5	150.5	0.012	79.5	19.5	1.6
Products 1 to 3	2.9	144.5	24.6	0.014	85.4	23.0	14.6
Products 1 to 4	3.0	144.7	27.8	0.015	88.5	27.0	15.3
Products 1 to 5	3.4	129.4	26.0	0.014	89.7	28.6	17.1
Products 1 to 6	4.9	92.6	20.9	0.013	92.5	33.1	22.2
Products 1 to 7	9.3	49.5	13.9	0.010	93.9	41.7	31.3
Products 1 to 8	16.5	28.4	8.7	0.009	95.7	46.3	53.8

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	0.1	0.1	99.9
100	0.9	1.0	99.0
150	5.2	6.2	93.8
200	13.3	19.5	80.5
270	18.9	38.4	61.6
400	18.2	56.6	43.4
- 400	43.4	100.0	-
Total	100.0	-	-

Test No 22

Purpose:	To produce a gravity concentrate from the Oldham tailing.
Procedure:	As for Test 21.
Feed:	2000 grams Oldham tailing as received.
Comments:	The sample was contaminated during the gravity tabling. Repeat as in Test 22R.

Test No. 22 - Continued

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.11	4444	395	58.3	14.6
2. Cleaner Conc.	0.35	709	84.3	29.6	9.9
3. Slime Ro. Conc.	3.13	14.7	9.2	5.5	9.7
4. 4th Cl. Tail.	0.13	46.8	7.7	0.7	0.3
5. 3rd Cl. Tail.	0.23	9.98	7.2	0.3	0.6
6. 2nd Cl. Tail.	1.48	5.96	2.1	1.1	1.1
7. 1st Cl. Tail.	3.64	1.40	<2.0	1.5	5.5
8. Slime Ro. Tail.	8.15	1.61	<2.0	1.5	5.5
9. Rougher Tail.	82.78	0.25	<2.0	2.4	55.8
Head (Calc.)	100.00	8.39	2.97	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.46	1602.15	158.61	87.9	24.5
Products 1 to 3	3.59	218.11	28.35	93.4	34.2
Products 1 to 4	3.72	212.12	27.62	94.1	34.5
Products 1 to 5	3.95	200.35	26.44	94.4	35.1
Products 1 to 6	5.48	146.02	19.62	95.5	36.1
Products 1 to 7	9.07	88.79	12.66	96.1	38.6
Products 1 to 8	17.22	47.53	7.61	97.6	44.2

Test No. 22R

Purpose:	To repeat Test 22.
Procedure:	The sample was passed over a Wilfley table. The concentrate was then cleaned further on a Mozley separator. The concentrate was assayed for gold. The Mozley tail and Wilfley table tail were combined for flotation.
Sample:	2000 grams of sample as received.

Test No. 22R - Flotation

Purpose: To float a sulphide concentrate as well as to float the slimes.

Procedure: As for Test 21.

Feed: 2000 grams combined table tail and Mozley tail.

Grind: 30 minutes at 65 % solids in the lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
SANDS:							
Rougher	20	20	12	6	1	2	7.3
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-
3rd Cleaner	-	-	-	-	1	2	-
	2	2	-	-	1	2	-
4th Cleaner	-	-	-	-	1	3	-
SLMES:							
Rougher	5	5	3	1.5	1	2	-
	2.5	2.5	-	0.75	1	2	-
	2.5	2.5	-	0.75	1	2	-
	2.5	2.5	-	0.75	1	2	-

Stage	Rougher	1st + 2nd Cleaners	3rd + 4th Cleaners
Flotation Cell	1000 g D-1	500 g D-1	250 g D-1
Speed rpm	1800	1500	900

Test No. 22R - Continued

limes.

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.1	1079	133	30.0	4.9
2. 4th Cl. Conc.	0.3	470	81.4	39.1	9.0
3. Slimes Ro. Conc.	2.9	13.0	4.2	10.5	4.5
4. 4th Cleaner Tail.	0.1	48.0	54.6	1.3	2.0
5. 3rd Cleaner Tail.	0.6	8.06	14.8	1.3	3.3
6. 2nd Cleaner Tail.	2.9	6.50	2.7	5.2	2.9
7. 1st Cleaner Tail.	7.8	1.64	3.8	3.6	10.8
8. Slimes Ro. Tail.	7.5	1.40	<2.0	3.0	5.5
9. Rougher Tail.	77.8	0.28	<2.0	6.0	57.1
Head (Calc.)	100.0	3.60	2.72	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	0.4	622.25	94.3	69.1	13.9
Products 1 to 3	3.3	86.85	15.12	79.6	18.4
Products 1 to 4	3.4	85.71	16.28	80.9	20.4
Products 1 to 5	4.0	74.06	16.06	82.2	23.7
Products 1 to 6	6.9	45.67	10.44	87.4	26.6
Products 1 to 7	14.7	22.30	6.92	91.0	37.4
Products 1 to 8	22.2	15.24	5.26	94.0	42.9

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 65	0.1	0.1	99.9
100	0.3	0.4	99.6
150	2.2	2.6	97.4
200	7.8	10.4	89.6
270	15.7	26.1	73.9
400	19.4	45.5	54.5
- 400	54.5	100.0	-
Total	100.0	-	-

Test No. 23

Purpose: To float a sulphide concentrate followed by cyanidation.

Procedure: The sample was deslimed. The slimes were cyanided and sands were ground for flotation.

Feed: 2000 grams of tailing sample

Grind: 10 minutes at 65 % solids in the lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.2
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners
Flotation Cell	1000 g D-1	500 g D-1
Speed rpm	1800	1500

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. 2nd Cleaner Conc.	0.6	321.49	36.36	63.3	7.3
2. 2nd Cleaner Tail.	0.6	21.18	8.40	4.2	1.7
3. 1st Cleaner Tail.	2.4	5.75	3.95	4.5	3.2
4. Rougher Tailing	83.3	0.46	2.55	12.6	71.4
5. Slimes	13.1	3.57	3.73	15.4	16.4
Head (Calc.)	100.0	3.04	2.98	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1.2	171.33	22.38	67.5	9.0
Products 1 to 3	3.6	60.94	10.09	72.0	12.2
Products 1,2,3 + 5	16.7	15.94	5.10	87.4	28.6

Test No. 23A

Purpose: To investigate the gold and silver extraction from the slimes of Test 23.

Procedure: The sample was pulped with water in a 2 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 348 g Slimes from Test 23

Solution Volume: 706 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-0.5	0.74	1.20	0.71	0.91	-	0	-	0.91	11.2- 9.6
0.5-3	-	1.09	-	0.83	0.39	0	0.32	0.83	11.2-10.2
3-5.5	0.34	0.35	0.32	0.27	0.56	0	0.15	0.27	11.2-10.6
5.5-24	0.16	0.20	0.15	0.15	0.57	0.02	0.14	0.13	11.2-10.4
Stage 2:									
0-24	0.74	0.5	0.71	0.38	0.60	0.06	0.11	0.32	11.2-10.4
Total	1.98	3.34	1.89	2.54	1.17	0.08	0.72	2.46	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 2.86
CaO : 9.77

Test No. 23A - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	1905 mL	0.46	0.20	98.0	40.4
2. 48 h Preg + Wash	2010 mL	0.004	0.03	0.9	6.4
3. 48 h Cyanide Residue	251.8 g	0.04	<2.0	1.1	53.2
Head (Calc.)	251.8 g	3.57	3.73	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	3915 mL	0.23	0.11	98.9	46.8

Test No. 23B-1

Purpose: To investigate the gold and silver extraction from the flotation rougher tailing from test 23.

Procedure: The sample was pulped with water in a 4 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 815 g Rougher Tail from Test 23

Solution Volume: 1630 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-0.5	1.72	1.79	1.63	1.36	-	0	-	1.36	11.1-10.2
0.5-3	-	1.0	-	0.76	1.39	0.03	0.24	0.73	11.4-10.8
3-24	0.25	0.35	0.24	0.27	1.57	0.10	0.06	0.20	11.4-10.8
Stage 2:									
0-24	1.72	1.0	1.63	0.76	1.55	0.18	0.08	0.58	11.4-10.8
Total	3.69	4.14	3.50	3.15	3.12	0.28	0.38	2.87	-

Test No. 23B-2

Feed: 815 g Rougher Tail

Solution Volume: 1630 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-0.5	1.72	1.79	1.63	1.36	-	0	-	1.36	11.3-10.2
0.5-3	-	1.0	-	0.76	1.39	0.03	0.24	0.73	11.4-10.8
3-24	0.25	0.35	0.24	0.27	1.57	0.10	0.06	0.20	11.4-10.8
Stage 2:									
0-24	1.72	1.0	1.63	0.76	1.55	0.18	0.08	0.58	11.4-10.8
Total	3.69	4.14	3.50	3.15	3.12	0.28	0.38	2.87	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 0.47
CaO : 3.57 B1+B2

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	8050 mL	0.082	0.08	89.2	15.6
2. 48 h Preg + Wash	7950 mL	0.006	<0.03	6.8	5.9
3. 48 h Cyanide Residue	1605.9 g	0.02	<2.0	4.0	78.5
Head (Calc.)	1605.9 g	0.46	2.55	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	16000 mL	0.044	0.055	96.0	21.5

Test No. 23C

Purpose: To investigate the gold and silver extraction from the 1st cleaner tail from flotation test 23.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 45 g 1st Cl. Tail. from Test 23

Solution Volume: 200 mL Pulp Density 18 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.21	0.5	0.20	0.27	-	-	-	-	11.4-10.0
3-5	-	0.15	-	0.11	-	-	-	-	11.2-10.6
5-24	-	0.08	-	0.06	0.08	0.02	0.12	0.42	11.2-10.3
Stage 2:									
0-24	0.21	0.30	0.20	0.23	0.19	0.03	0.01	0.20	11.4-10.6
Total	0.42	1.03	0.40	0.67	0.27	0.05	0.13	0.62	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 2.85
CaO : 13.60

Test No. 23C - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	890 mL	0.20	0.07	68.7	33.3
2. 48 h Preg + Wash	925 mL	0.089	<0.03	30.5	16.7
3. 48 h Cyanide Residue	45.6 g	0.04	<2.0	0.8	50.0
Head (Calc.)	45.6 g	5.75	3.95	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1815 mL	0.14	0.05	99.2	50.0

Test No. 23D

Purpose: To investigate the gold and silver extraction from a 2nd cleaner tail from flotation Test 23.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 12 g 2nd Cleaner Tail from Test 23

Solution Volume: 200 mL Pulp Density 5.5 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.21	0.15	0.20	0.11	-	-	-	-	11.4-10.0
3-5	-	0.10	-	0.08	-	-	-	-	11.4-10.4
5-24	-	0.08	-	0.06	0.13	0.02	0.07	0.23	11.4-10.7
Stage 2:									
0-24	0.21	0.15	0.20	0.11	0.05	0.02	0.15	0.09	11.4-10.8
Total	0.42	0.48	0.40	0.36	0.18	0.04	0.22	0.32	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 18.49
CaO : 26.89

Test No. 23D - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	730 mL	0.31	0.08	91.3	60.0
2. 48 h Preg + Wash	730 mL	0.031	<0.03	7.9	20.0
3. 48 h Cyanide Residue	11.9 g	0.16	<2.0	0.8	20.0
Head (Calc.)	11.9 g	21.18	8.40	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1460 mL	0.17	0.05	99.2	80.0

Test No. 23E

Purpose: To investigate the gold and silver extraction from 2nd cleaner concentrate from Test 23.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 12 g 2nd Cl. Conc. from Test 23

Solution Volume: 200 mL Pulp Density 5.5 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.21	0.11	0.20	0.08	-	-	-	-	11.2-10.0
3-5	-	0.10	-	0.08	-	-	-	-	11.4-10.6
5-25	-	0.08	-	0.06	0.16	0.02	0.04	0.20	11.4-10.6
Stage 2:									
0-24	0.21	0.11	0.20	0.08	0.15	0.02	0.02	0.06	11.4-10.8
Total	0.42	0.40	0.40	0.30	0.34	0.04	0.06	0.26	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 4.96
CaO : 21.49

Test No. 23E - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	715 mL	4.40	0.39	81.0	63.6
2. 48 h Preg + Wash	825 mL	0.82	0.08	17.5	15.9
3. 48 h Cyanide Residue	12.1 g	4.59	7.4	1.5	20.5
Head (Calc.)	12.1 g	321.49	36.36	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1540 mL	2.49	0.23	98.5	79.5

Test No. 23

Product	Weight %	% Dist. in Flotation Au	Ag	% Rec'y by Cyanidation Au	Ag	Overall % Rec'y Au	Ag
2nd Cl. Conc.	0.6	63.3	7.3	98.5	79.5	62.3	5.8
2nd Cl. Tail.	0.6	4.2	1.7	99.2	80.0	4.2	1.4
1st Cl. Tail.	2.4	4.5	3.2	99.2	50.0	4.5	1.6
Rougher Tail.	83.3	12.6	71.4	96.0	21.5	12.1	15.3
Slime	13.1	15.4	16.4	98.9	46.8	15.2	7.7
Total	100.0	100.0	100.0	-	-	98.3	31.8

Product	Weight %	Residue, g/t Au	Ag	Metal Unit Au	Ag	Reagent Cons., kg/t NaCN	CaO	Reagent Unit NaCN	CaO
2nd Cl. Conc.	0.6	4.59	7.4	2.754	4.44	4.96	21.49	2.976	12.894
2nd Cl. Tail.	0.6	0.16	<2.0	0.096	1.20	18.49	26.89	11.094	16.134
1st Cl. Tail.	2.4	0.04	<2.0	0.096	4.80	2.85	13.60	6.84	32.64
Rougher Tail.	83.3	0.02	<2.0	1.666	166.6	0.47	3.57	39.151	297.381
Slime	13.1	0.04	<2.0	0.524	26.2	2.86	9.77	37.466	127.987
Total	100.0	0.05	2.0	5.136	203.24	0.97	4.87	97.527	487.036

Screen Analysis - 48 h Cyanide Residue (Test 23B)

Mesh Size (Tyler)	% Retained Individual	Cumulative	% Passing Cumulative
+ 65	1.9	1.9	98.1
100	5.1	7.0	93.0
150	14.9	21.9	78.1
200	19.7	41.6	58.4
270	18.4	60.0	40.0
400	14.3	74.3	25.7
- 400	25.7	100.0	-
Total	100.0	-	-

Test No. 24

Purpose: As for Test 23 but with a finer grind.

Procedure: The sample was deslimed. The slimes were cyanided and sands were reground for flotation.

Feed: 2000 grams of tailing sample

Grind: 30 minutes at 65 % solids in the lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.2
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-
2nd Cleaner	-	-	-	-	1	2	-
	4	4	-	-	1	3	-

Stage	Rougher	1st + 2nd Cleaners
Flotation Cell	1000 g D-1	500 g D-1
Speed rpm	1800	1500

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. 2nd Cleaner Conc.	1.1	194.09	19.55	67.3	7.3
2. 2nd Cleaner Tail.	1.6	3.89	4.20	2.0	2.3
3. 1st Cleaner Tail.	5.1	5.27	3.22	8.5	5.6
4. Rougher Tail.	80.5	0.38	2.51	9.6	69.0
5. Slimes	11.7	3.41	3.96	12.6	15.8
Head (Calc.)	100.0	3.17	2.93	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	2.7	81.38	10.45	69.3	9.6
Products 1 to 3	7.8	31.62	5.72	77.8	15.2
Products 1,2,3 +5	19.5	14.21	12.65	90.4	31.0

Test No. 24A

Purpose: To investigate the gold and silver extraction from the slimes of Test 24.

Procedure: The sample was pulped with water in a 2 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 300 g Slimes from Test 24.

Solution Volume: 600 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:			-						
0-0.5	0.63	1.20	0.60	0.91	-	0	-	0.91	11.2- 9.8
0.5-3	-	1.09	-	0.83	0.30	0	0.30	0.83	11.2-10.2
3-5.5	0.32	0.35	0.30	0.27	0.48	0	0.12	0.27	11.2-10.8
5.5-24	0.13	0.20	0.12	0.15	0.59	0.03	0.01	0.12	11.0-10.4
Stage 2:									
0-24	0.63	0.59	0.60	0.45	0.56	0.35	0.04	0.10	11.4-10.6
Total	1.71	3.43	1.62	2.61	1.15	0.38	0.47	2.23	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 2.01
CaO : 9.55

Test No. 24A - Continued

Metalurgical Results

Product	Amount	Assays mg/L,g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	2100 mL	0.37	0.19	97.5	43.1
2. 48 h Preg + Wash	1920 mL	0.003	<0.03	0.8	6.5
3. 48 h Cyanide Residue	233.6 g	0.06	<2.0	1.7	50.4
Head (Calc.)	233.6 g	3.41	3.96	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	4020 mL	0.19	0.11	98.3	49.6

Test No. 24B-1

Purpose: To investigate the gold and silver extraction from a flotation rougher tail of Test 24.

Procedure: The sample was pulped with water in a 4 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 833 g Rougher Tail. from Test 24

Solution Volume: 1792 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-0.5	1.89	1.83	1.79	1.39	-	0	-	1.39	11.0-10.2
0.5-3	-	1.0	-	0.76	1.52	0.04	0.27	0.72	11.4-10.8
3-24	0.28	0.35	0.27	0.27	1.66	0.07	0.13	0.24	11.4-10.4
Stage 2:									
0-24	1.89	1.0	1.79	0.76	1.75	0.17	0.04	0.59	11.4-10.8
Total	4.06	4.18	3.85	3.18	3.41	0.24	0.44	2.94	-

Test No. 24B-2

Purpose: 833 g Rougher Tail

Solution Volume: 1792 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-0.5	1.89	1.83	1.79	1.39	-	0	-	1.39	11.0-10.2
0.5-3	-	1.0	-	0.76	1.52	0.04	0.27	0.72	11.4-10.8
3-24	0.28	0.35	0.27	0.27	1.66	0.07	0.13	0.24	11.4-10.4
Stage 2:									
0-24	1.89	1.0	1.79	0.76	1.75	0.17	0.04	0.59	11.4-10.8
Total	4.06	4.18	3.85	3.18	3.41	0.24	0.44	2.94	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 0.55
CaO : 3.67

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	8290 mL	0.068	0.07	91.8	14.4
2. 48 h Preg + Wash	7620 mL	0.003	0.03	3.3	5.7
3. 48 h Cyanide Residue	1602.7 g	0.02	<2.0	4.9	79.9
Head (Calc.)	1602.7 g	0.38	2.51	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	15910 mL	0.036	0.051	95.1	20.1

Test No. 24C

Purpose: To investigate the gold and silver extraction from flotation 1st cleaner tail of Test 24.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 128 g 1st Cl. Tail. from Test 24

Solution Volume: 260 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.27	0.80	0.26	0.61	-	-	-	-	11.3- 9.8
3-5	-	0.30	-	0.23	-	-	-	-	11.2-10.4
5-24	-	0.20	-	0.15	0.04	0.02	0.22	0.97	11.3-10.2
Stage 2:									
0-24	0.27	0.20	0.26	0.15	0.19	0.02	0.07	0.13	11.4-10.4
Total	0.54	1.50	0.52	1.14	0.23	0.04	0.29	1.1	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 2.83
CaO : 10.73

Test No. 24C - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	760 mL	0.020	<0.03	3.7	6.1
2. 48 h Preg + Wash	805 mL	0.61	0.13	90.7	30.3
3. 48 h Cyanide Residue	102.5 g	0.30	<2.0	5.6	63.6
Head (Calc.)	102.5 g	5.27	3.22	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1565 mL	0.33	0.08	94.4	36.4

Test No. 24D - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	825 mL	0.12	0.05	80.7	29.9
2. 48 h Preg + Wash	865 mL	0.021	<0.03	16.1	22.4
3. 48 h Cyanide Residue	31.9 g	0.11	<2.0	3.2	47.7
Head (Calc.)	31.9 g	3.89	4.20	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1690 mL	0.07	0.04	96.8	52.3

Test No. 24E

Purpose: To investigate the gold and silver extraction from flotation 2nd Cleaner Conc. of Test 24.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 31 g 2nd Cl. Conc.

Solution Volume: 200 mL Pulp Density 13 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams ·				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.21	0.30	0.20	0.23	-	-	-	-	11.3-10.6
3-5	-	0.20	-	0.15	-	-	-	-	11.5-11.4
5-24	-	-	-	-	0.11	0.03	0.09	0.35	11.4-10.8
Stage 2:									
0-24	0.21	0.15	0.20	0.11	0.20	0.03	0	0.08	11.4-11.0
Total	0.42	0.65	0.40	0.49	0.31	0.06	0.09	0.43	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 4.09
CaO : 19.55

Test No. 24E - Continued

Metallurgical Results

Product	Amount	Assays mg/L,g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash	785 mL	4.00	0.33	73.5	60.5
2. 48 h Preg + Wash	750 mL	1.40	0.13	24.6	23.3
3. 48 h Cyanide Residue	22.0 g	3.79	3.1	1.9	16.2
Head (Calc.)	22.0 g	194.09	19.55	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1535 mL	2.73	0.23	98.1	83.8

Test No. 24 - Continued

Product	Weight %	% Dist. in Flotation Au	Ag	% Rec'y by Cyanidation Au	Ag	Overall % Rec'y Au	Ag
2nd Cl. Conc.	1.1	67.3	7.3	98.1	83.8	66.0	6.1
2nd Cl. Tail.	1.6	2.0	2.3	96.8	52.3	1.9	1.2
1st Cl. Tail.	5.1	8.5	5.6	94.4	36.4	8.0	2.0
Rougher Tail.	80.5	9.6	69.0	95.1	20.1	9.1	13.9
Slime	11.7	12.6	15.8	98.3	49.6	12.4	7.8
Total	100.0	100.0	100.0	-	-	97.4	31.0

Product	Weight %	Residue g/t Au	Ag	Metal Unit Au	Ag	Reagent Cons. kg/t NaCN	CaO	Reagent Unit NaCN	CaO
2nd Cl. Conc.	1.1	3.79	3.1	4.169	3.41	4.09	19.55	4.499	21.505
2nd Cl. Tail.	1.6	0.11	<2.0	0.176	3.20	3.13	15.36	5.008	24.576
1st Cl. Tail.	5.1	0.30	<2.0	1.53	10.2	2.83	10.73	14.433	54.723
Rougher Tail.	80.5	0.02	<2.0	1.61	161.0	0.55	3.67	44.275	295.435
Slime	11.7	0.06	<2.0	0.702	23.4	2.01	9.55	23.517	111.735
Total	100.0	0.08	2.0	8.187	201.21	0.92	5.08	91.732	507.974

Screen Analysis - 48 h Cyanide Residue

Mesh Size (Tyler)	% Retained Individual	Cumulative	% Passing Cumulative
+ 65	0.1	0.1	99.9
100	0.5	0.6	99.4
150	3.8	4.4	95.6
200	10.8	15.2	84.8
270	18.1	33.3	66.7
400	22.0	55.3	44.7
- 400	44.7	100.0	-
Total	100.0	-	-

Test No. 25

Purpose:	To produce a gravity concentrate from the tailing sample.
Procedure:	The sample was passed over a Wifley table. The concentrate and tailing were collected. The concentrate was cleaned on a Mozley separator. The Mozley concentrate was assayed for Au. The table tail and Mozley tail were combined for flotation tests.
Feed:	2000 grams of tailing sample as received.

Test No. 25

Purpose: To float a sulphide concentrate followed by cyanidation.

Procedure: The sample was deslimed. The slimes were cyanided and sands were ground for flotation.

Feed: 2000 grams of table tailing sample.

Grind: 30 minutes at 65 % solids in the lab ball mill.

Conditions:

Stage	Reagents Added, g/t				Time, minutes		pH
	AX350	R208	AF25	DF250	Cond.	Froth	
Rougher	20	20	12	6	1	2	7.2
	10	10	-	3	1	2	-
	10	10	-	3	1	2	-
	10	10	-	3	1	3	-
1st Cleaner	-	-	-	-	1	3	-
	6	10	-	-	1	3	-

Stage	Rougher	1st Cleaner
Flotation Cell	1000 g D-1	500 g D-1
Speed rpm	1800	1500

Metallurgical Results

Product	Weight %	Assays g/t		% Distribution	
		Au	Ag	Au	Ag
1. Mozley Conc.	0.15	845	195	26.6	9.3
2. 1st Cleaner Conc.	2.57	108.04	26.08	58.3	21.4
3. 1st Cleaner Tail.	5.06	4.78	3.39	5.1	5.5
4. Rougher Tailing	85.67	0.38	<2.0	6.8	54.7
5. Slimes	6.55	2.33	4.39	3.2	9.1
Head (Calc.)	100.00	4.76	3.13	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	2.72	148.68	35.40	84.9	30.7
Products 1 to 3	7.78	55.09	14.58	90.0	36.2
Products 1 to 3 + 5	14.33	32.18	19.87	93.2	45.3

Test No. 25A

Purpose: To investigate the gold and silver extraction of slimes from flotation Test 25.

Procedure: The sample was pulped with water in a 2 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 124 g slimes from Test 25.

Solution Volume: 252 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.27	1.0	0.25	0.76	0.13	0	0.12	0.76	11.3-10.0
3-20	0.13	0.30	0.12	0.23	-	-	-	-	11.2-10.2
20-24	-	0.20	-	0.15	0.22	0.06	0.03	0.32	11.4-10.8
Stage 2:									
0-24	0.27	0.50	0.25	0.38	0.24	0.06	0.01	0.32	11.6-11.3
Total	0.67	2.0	0.62	1.52	0.46	0.12	0.16	1.40	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 1.23
CaO : 10.75

Test No. 25A - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash Sol'n	1960 mL	0.15	0.08	96.7	27.3
2. 48 h Preg + Wash Sol'n	1250 mL	0.002	0.03	1.0	6.6
3. 48 h Cyanide Residue	130.2 g	0.05	2.9	2.3	66.1
Head (Calc.)	130.2 g	2.33	4.39	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	3210 mL	0.09	0.06	97.7	33.9

Test No. 25B

Purpose: To investigate the gold and silver extraction from 1st cleaner tail of flotation test 25.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 105 g of 1st Cl. Tail. from Flotation Test 25

Solution Volume: 213 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.22	0.90	0.21	0.68	0.06	0	0.15	0.68	11.2-10.0
3-20	0.16	0.40	0.15	-	-	-	-	-	11.4-10.4
20-24	-	0.20	-	0.15	0.11	0.04	0.10	0.11	11.4-11.1
Stage 2:									
0-24	0.22	0.30	0.21	0.23	0.17	0.04	0.04	0.19	11.4-11.2
Total	0.60	1.80	0.57	1.06	0.28	0.08	0.29	0.98	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 2.89
CaO : 9.76

Test No. 25B - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash Sol'n	710 mL	0.42	0.13	62.5	26.5
2. 48 h Preg + Wash Sol'n	610 mL	0.27	0.08	33.3	14.7
3. 48 h Cyanide Residue	100.4 g	0.24	<2.0	4.2	58.8
Head (Calc.)	100.4 g	4.78	3.39	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1320 mL	0.35	0.11	95.8	41.2

Test No. 25C

Purpose: To investigate the gold and silver extraction from 1st cleaner concentrate of Flotation Test 25.

Procedure: The sample was pulped with water in a 1 liter bottle. NaCN and lime were added and the cyanidation was carried out on rolls in two 24 hour stages with the solution being changed after each stage. Between each stage the pulp was filtered and the residue washed three times with water. The residue was then repulped with fresh cyanide solution and the test continued.

Feed: 53.1 g 1st Cl. Conc. from Test 25

Solution Volume: 108 mL Pulp Density 33 % solids

Solution Composition: 1.0 gpL NaCN

pH: 11 with $Ca(OH)_2$

Reagent Balance:

Time Hours	Added, grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
Stage 1:									
0-3	0.11	0.70	0.11	0.53	0.03	0	0.08	0.53	11.3-10.2
3-20	0.08	0.20	0.08	0.15	-	-	-	-	11.4-10.4
20-24	-	0.20	-	0.15	0.06	0.04	0.05	0.26	11.4-11.2
Stage 2:									
0-24	0.11	0.30	0.11	0.23	0.09	0.05	0.02	0.18	11.6-11.5
Total	0.30	1.40	0.30	1.06	0.15	0.09	0.15	0.97	-

Reagent Consumption (kg/t of cyanide feed) NaCN : 2.94
CaO : 19.02

Test No. 25C - Continued

Metallurgical Results

Product	Amount	Assays mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
1. 24 h Preg + Wash Sol'n	795 mL	2.85	0.33	41.2	19.5
2. 48 h Preg + Wash Sol'n	780 mL	3.67	0.46	51.9	27.1
3. 48 h Cyanide Residue	51.0 g	7.39	14.0	6.9	53.4
Head (Calc.)	51.0 g	108.04	26.08	100.0	100.0

Calculated Grades and Recoveries

Products 1 and 2	1575 mL	3.26	0.39	93.1	46.6

Test No. 25 - Continued

Product	Weight %	% Dist. in Flotation Au	Ag	% Rec'y by Cyanidation Au	Ag	Overall % Rec'y Au	Ag
Mozley Conc.	0.15	-	-	-	-	26.6	9.3
1st Cl. Conc.	2.57	58.3	21.4	93.1	46.6	54.3	10.0
1st Cl. Tail.	5.06	5.1	5.5	95.8	41.2	4.9	2.3
Rougher Tail.	85.67	6.8	54.7	-	-	-	-
Slime	6.55	3.2	9.1	97.7	33.9	3.1	3.1
Total	100.00	73.4	90.7	-	-	88.9	24.7

Product	Weight %	Residue, g/t Au	Ag	Metal Unit Au	Ag	Reagent Cons. kg/t NaCN	CaO	Reagent Unit NaCN	CaO
1st Cl. Conc.	18.1	7.39	14.0	133.759	253.40	2.94	19.02	53.214	344.26
1st Cl. Tail.	35.7	0.24	<2.0	8.568	71.40	2.89	9.76	103.173	348.43
Slime	46.2	0.05	2.9	2.31	133.98	1.23	10.75	56.826	496.65
Total	100.0	1.45	4.59	144.637	458.78	2.13	11.89	213.213	1189.3

Screen Analysis - Rougher Tailing

Mesh Size (Tyler)	% Retained Individual	Cumulative	% Passing Cumulative
+ 100	0.2	0.2	99.8
150	2.4	2.6	97.4
200	9.4	12.0	88.0
270	17.7	29.7	70.3
400	20.9	50.6	49.4
- 400	49.4	100.0	-
Total	100.0	-	-